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# THE HOST PLANTS OF PANÆOLUS EPIMYCES PECK.

HELEN SHERMAN.

Panæolus epimyces, first discovered and described by Peck,[1] has been found from time to time more or less abundantly in the vicinity of Madison, Wis. The same species has been reported near London, Ontario, from whence it was sent by Dearness[2] to the Lloyd Mycological Museum. Neither Peck nor Dearness mentioned the host plant of this fungus.

Peck's description is as follows: Pileus fleshy, at first subglobose, then convex, white, silky-fibrillose, flesh soft, white or whitish; lamellae rather broad, somewhat close, rounded behind, adnexed, dingy white becoming brown or blackish with a white edge; stem short tapering upward, strongly striate and minutely mealy or pruinose, solid in the young plant hollow in the mature plant but with the cavity small, hairy or substrigose at the base; spores elliptical black, .0003′-.00035′ long, .0002′-.00025′ broad. Plant 1′-1.5′ high, pileus 8″-12″ broad, stem 3″-4″ thick. Parasitic on fungi.
North Greenbush, November.

Specimens found in this region agree with this description quite closely. The only points of difference are that the pileus and spores are larger. The pileus is sometimes over 2 in. broad and the spores run up to .0004′ long by .00028′ broad.

McKenna,[3] in 1900, studied the material collected at Madison and identified the host of all the specimens found up to that time as Coprinus atramentarius (Bull.) Fr. His material was always found growing in close connection with uninfected clumps of C. atramentarius. Upon sectioning the thickened edges of the hypertrophied mass of the host, he found the gills and hymenium well developed. He also found mature spores which were identical with those of C. atramentarius. From one to seven of the parasitic fruit bodies were found on a single host.

In order to work out the relations of the hyphae of the host and parasite he fixed, imbedded and sectioned tissues from different parts of several specimens especially from the point where the stipe of the parasite arises from the tissues of the host. The hyphae of the parasite were found to be denser and smaller than those of the host. They branch profusely toward their ends and are swollen at the very tips. These hyphae for the most part spread abundantly through the tissues of the host. However, they are not found deep down in the host tissues immediately below the point from which the stipe of the parasite arises. Nor do more than a few scattered hyphae appear in the peripheral regions of the swollen edges of the hypertrophied host. Occasionally he found the hyphae of the host swollen greatly, but in no case were their walls penetrated by the hyphae of the parasite.

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[1] C. H. Peck. 35th Annual Report of New York Museum of Natural History. Report of Botanist, 1882, p. 133.

[2] Lloyd. 4th Report of Lloyd Mycological Museum for 1898. Catalogue of Specimens added during 1898, p. 5.

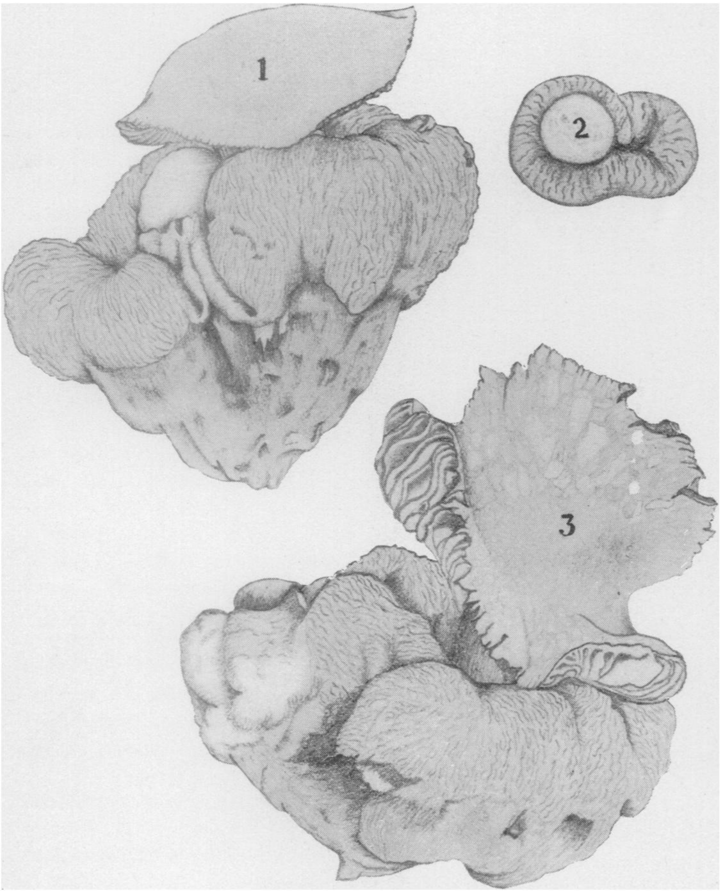
[3] F. H. McKenna. Some Fungous Parasites of the Fungi. Thesis, Univ. of Wis., 1900, MSS., p. 18.

On October 6, 1904, four very perfect and well developed specimens of Paneolus epimyces were found on a shady lawn apparently parasitic on Coprinus comatus Fr. Several large healthy specimens of the latter were found not more than 5 in. distant from any one of the infected forms and no other Agaric was or has since been found growing in that ivicinity.

These specimens resembled the herbarium specimens of those parasitic on C. atramentarius (as identified by McKenna), but with some variations. They are considerably larger, but the greater size is only proportional to the greater size of C. comatus as compared with C. atramentarius. The pileus in one specimen is 3.5′ broad. Here and there portions of the veil adhere to the pileus, forming a fringe on the young cap. The surface of the cap is roughened by reticulate umber colored areas, especially at the margin, which latter become elevated and flaky, breaking up into recurved umber patches. The stipe is cylindrical 1.5′ long by 5″ in diameter in the largest specimen. The spores vary in size from.0003′-.0004′ by .0002′-.00028′.

The hypertrophied host resembles that described by McKenna, but is larger, becoming from 2 to 3 inches in diameter by 2 inches high. It forms a cup-shaped or cushion-like mass with swollen edges and a deep indentation at the top. Sometimes a single large carpophore arises from the center of this indentation. In other cases two or more are present in various stages of development. The mass of the host is scarcely distinguishable as stipe and pileus. It is merely narrowed below and is connected directly with thick mycelial strands ramifying in the substratum. The outside is striate and covered with brownish fibres, especially that portion which corresponds to the pileus. The thickened edges of the hypertrophied host were examined, and although the gills, basidia and sterigmata could be distinctly made out, the fungus was apparently not sufficiently matured to produce spores.

The reasons for believing the host in this case to be Coprinus comatus are as follows: The fungi in question are accompanied by growths of C. comatus only, and the host resembles closely the form identified from its spores as C. atramentarius by McKenna, but is as much larger than that form as Coprinus comatus is larger than Coprinus atramentarius.



PANAEOLUS EPIMYCES PECK.

So called abortive forms very similar to these parasitized Coprini have been described for Clitopilus prunulus Scop, Clitopilus abortivius B. & C. and Armillaria mellea Vahl, but the cause of these formations is still unexplained. Clitopilus prunulus[1] produces aborted forms singly or in tufts. They are very variable in shape and are white tinged with brown on ruptured surfaces.

Peck[2] in describing the aborted forms of Clitopilus abortivus B. & C. says they are irregular or sub-globose fleshy whitish masses occurring in company with normal forms and apparently under the same conditions of soil, moisture and temperature. These forms are common here and are found in various stages of development. Some show marked characteristics of the normal form of C. abortivus while others are hypertrophied and contorted into masses resembling closely the forms described above for the Coprini. They are smaller, however, the largest not being over 1-1½ in. in diameter. The gills show plainly on sectioning.

The abortive forms of Armillaria mellea Vahl are also common in this region and are very similar to those of the two Clitopili just mentioned. Peck[3] states in his description of this form that the masses are of cellular matter without any distinction of stem, pileus or lamellae. "Without positive proof," McIlvaine[4] says, "no one would suspect either of these odd formations to be abortive of either Clitopilus abortivus or Armillaria mellea or any other fungus." In view of their resemblances to the parasitized Coprini described above, it is quite possible that these monstrosities are due also to the presence of some parasitic agaric which for some reason is unable to produce carpophores.

Explanation of Plate 80. — Panæolus epimyces Peck. Fig. 1 shows a well developed plant attached to its host. A later stage of the same is shown in Fig. 3, while a very young carpophore is illustrated in Fig. 2.

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[1] McIlvane. One Thousand Am. Fungi, p. 256.

[2] Peck, C. H. 42d Report of N. Y. State Museum of Nat. Hist for 1888. Report of Botanist, p. 138; see also McIlvane, One Thousand Am. Fungi, p. 257.

[3] Peck, C. H. 43d Report of N. Y. State Museum for 1889. Report of Bot., p. 89.

[4] McIlvane. One Thousand Am. Fungi, p. 56.